

Claims:

1. A method of making an aluminum reduction cell component having a stabilized surface, which comprises mixing together a carbonaceous material, 5 TiB_2 and up to 25% by weight of an additive consisting of a combination of two intimately mixed compounds and baking the mixture into a cell component, wherein at least a first of the two 10 compounds has a higher melting temperature than the baking temperature, whereby when the cell component is contacted with molten aluminum, the aluminum reacts with the additive to form a dense phase at the surface of the cell component, the dense phase having low solubility in aluminum.
- 15 2. A method according to claim 1 wherein up to 10% by weight of the additive is mixed with the carbonaceous material and TiB_2 .
3. A method according to claim 2 wherein the combination of two intimately mixed compounds is 20 selected from a group of combinations consisting of: TiO_2 and B_2O_3 , TiC and B_2O_3 , Al_2O_3 and B_2O_3 , TiO_2 and $Na_2B_4O_7$, TiO_2 and BN, TiO_2 and B_4C , BN and B_2O_3 and Al-C-Ti master alloy and B_2O_3 .
- 25 4. A method according to claim 2 wherein the combination of two intimately mixed compounds comprises TiO_2 and B_2O_3 .
5. A method according to claim 4 wherein the TiO_2 and B_2O_3 are mixed in a ratio of 40-50% by weight TiO_2 and 50-60% by weight B_2O_3 .

6. A method according to claim 2 wherein the intimately mixed compounds comprise particles less than 200 μm in size.
7. A method according to claim 6 wherein the particles are less than 30 μm in size.
8. A method according to claim 2 wherein the carbonaceous material and TiB_2 are mixed in the ratio of 50% by weight of carbonaceous material and 40 to 49% by weight of TiB_2 .
9. A baked aluminum reduction cell component having a stabilized surface comprising carbonaceous material, TiB_2 and up to 25% by weight of an additive consisting of a combination of two intimately mixed compounds positioned in a carbon matrix between particles of the TiB_2 and reactable with molten aluminum to form a dense phase at the surface of the cell component, said dense phase having low solubility in aluminum, wherein at least a first of the two compounds has a higher melting temperature than a baking temperature of the cell component.
10. A baked cell component according to claim 9 containing up to 10% by weight of the additive.
11. A baked cell component according to claim 10 wherein the combination of two intimately mixed compounds is selected from the group of combinations consisting of: TiO_2 and B_2O_3 , TiC and B_2O_3 , Al_2O_3 and B_2O_3 , TiO_2 and $\text{Na}_2\text{B}_4\text{O}_7$, TiO_2 and BN , TiO_2 and B_4C , BN and B_2O_3 and Al-C-Ti master alloy and B_2O_3 .

12. A baked cell component according to claim 11 wherein the combination of two intimately mixed compounds comprises TiO_2 and B_2O_3 .
13. A baked cell component according to claim 10 wherein TiO_2 and B_2O_3 are present in a ratio of 40-50% by weight TiO_2 and 50-60% by weight B_2O_3 .
14. A baked cell component according to claim 9 wherein the intimately mixed compounds comprise particles less than 200 μm in size.
15. A baked cell component according to claim 14 wherein the particles are less than 30 μm in size.
16. A baked cell component according to claim 13 wherein the carbonaceous material and TiB_2 are present in the ratio of 50% by weight of carbonaceous material and 40 to 49% by weight of TiB_2 .
17. A baked cell component according to claim 9 wherein the component comprises a cathode.
- 20 18. A baked cell component according to claim 9 wherein the component comprises ramming paste.
19. A baked cell component according to claim 9 wherein the component comprises a refractory coating.
20. A baked cell component according to claim 9 wherein the component comprises a cell side wall block.